What is claimed is:

1. A display driver which drives a plurality of data lines of an electro-optical device, the electro-optical device having a plurality of scanning lines, the data lines which are alternately arranged inwardly from opposite sides of the electro-optical device in the shape of comb teeth, a plurality of switching elements respectively connected to the scanning lines and the data lines, and a plurality of pixel electrodes respectively connected to the switching elements,

the display driver comprising:

a grayscale bus to which grayscale data is supplied corresponding to an arrangement order of the data lines;

a first bidirectional shift register which shifts a shift start signal in a first shift direction and shifts a first opposite directional shift start signal in a second shift direction which is opposite to the first shift direction, based on a first shift clock signal, and outputs a shift output shifted in one of the first and second shift directions specified by a first shift direction control signal;

a second bidirectional shift register which shifts the shift start signal in the second shift direction and shifts a second opposite directional shift start signal in the first shift direction, based on a second shift clock signal, and outputs a shift output shifted in one of the first and second shift directions specified by a second shift direction control signal;

a drive mode setting register in which one of a normal drive mode and a comb-tooth drive mode is set;

a first shift start signal switch circuit which outputs the shift start signal or a shift output in a final stage of the second bidirectional shift register as the first opposite directional shift start signal, corresponding to the content of the drive mode setting register, the shift output having been shifted in the second shift direction in the second

bidirectional shift register;

a second shift start signal switch circuit which outputs the shift start signal or a shift output in a final stage of the first bidirectional shift register as the second opposite directional shift start signal, corresponding to the content of the drive mode setting register, the shift output having been shifted in the first shift direction in the first bidirectional shift register;

a first data latch which has a plurality of flip-flops each of which holds the grayscale data corresponding to one of the data lines based on a shift output in each stage of the first bidirectional shift register;

a second data latch which has a plurality of flip-flops each of which holds the grayscale data corresponding to one of the data lines based on a shift output in each stage of the second bidirectional shift register; and

a data line driver circuit in which a plurality of data output sections are arranged corresponding to the arrangement order of the data lines, each of the data output sections driving one of the data lines based on the grayscale data held in one of the flip-flops of the first or second data latch.

2. The display driver as defined in claim 1, further comprising:

a shift direction control circuit which outputs the first and second shift direction control signals based on the content of the drive mode setting register, wherein:

shift directions of the first and second bidirectional shift registers specified by the first and second shift direction control signals are the same when the normal drive mode is set in the drive mode setting register; and

shift directions of the first and second bidirectional shift registers specified by the first and second shift direction control signals are opposite when the comb-tooth drive mode is set in the drive mode setting register.

3. The display driver as defined in claim 2, further comprising:

a shift direction setting register in which shift directions of the first and second bidirectional shift registers are set,

wherein shift directions of the first and second bidirectional shift registers specified by the first and second shift direction control signals corresponding to the content of the shift direction setting register are opposite when the comb-tooth drive mode is set in the drive mode setting register.

4. The display driver as defined in claim 1, wherein:

the first shift start signal switch circuit outputs a shift output in a final stage of the second bidirectional shift register as the first opposite directional shift start signal when the normal drive mode is set in the drive mode setting register, or outputs the shift start signal as the first opposite directional shift start signal when the comb-tooth drive mode is set in the drive mode setting register, the shift output having been shifted in the second shift direction in the second bidirectional register; and

the second shift start signal switch circuit outputs a shift output in a final stage of the first bidirectional shift register as the second opposite directional shift start signal when the normal drive mode is set in the drive mode setting register, or outputs the shift start signal as the second opposite directional shift start signal when the comb-tooth drive mode is set in the drive mode setting register, the shift output having been shifted in the first shift direction in the first bidirectional shift register.

5. The display driver as defined in claim 2, wherein:

the first shift start signal switch circuit outputs a shift output in a final stage of the second bidirectional shift register as the first opposite directional shift start signal when the normal drive mode is set in the drive mode setting register, or outputs the shift

start signal as the first opposite directional shift start signal when the comb-tooth drive mode is set in the drive mode setting register, the shift output having been shifted in the second shift direction in the second bidirectional register; and

the second shift start signal switch circuit outputs a shift output in a final stage of the first bidirectional shift register as the second opposite directional shift start signal when the normal drive mode is set in the drive mode setting register, or outputs the shift start signal as the second opposite directional shift start signal when the comb-tooth drive mode is set in the drive mode setting register, the shift output having been shifted in the first shift direction in the first bidirectional shift register.

6. The display driver as defined in claim 3, wherein:

the first shift start signal switch circuit outputs a shift output in a final stage of the second bidirectional shift register as the first opposite directional shift start signal when the normal drive mode is set in the drive mode setting register, or outputs the shift start signal as the first opposite directional shift start signal when the comb-tooth drive mode is set in the drive mode setting register, the shift output having been shifted in the second shift direction in the second bidirectional register; and

the second shift start signal switch circuit outputs a shift output in a final stage of the first bidirectional shift register as the second opposite directional shift start signal when the normal drive mode is set in the drive mode setting register, or outputs the shift start signal as the second opposite directional shift start signal when the comb-tooth drive mode is set in the drive mode setting register, the shift output having been shifted in the first shift direction in the first bidirectional shift register.

7. The display driver as defined in claim 1,

wherein the data line driver circuit drives part of the data lines from a first side of the electro-optical device based on the data held in the flip-flops of the first data latch,

and drives part of the data lines from a second side of the electro-optical device facing the first side based on the data held in the flip-flops of the second data latch.

8. The display driver as defined in claim 2,

wherein the data line driver circuit drives part of the data lines from a first side of the electro-optical device based on the data held in the flip-flops of the first data latch, and drives part of the data lines from a second side of the electro-optical device facing the first side based on the data held in the flip-flops of the second data latch.

9. The display driver as defined in claim 3,

wherein the data line driver circuit drives part of the data lines from a first side of the electro-optical device based on the data held in the flip-flops of the first data latch, and drives part of the data lines from a second side of the electro-optical device facing the first side based on the data held in the flip-flops of the second data latch.

10. The display driver as defined in claim 4,

wherein the data line driver circuit drives part of the data lines from a first side of the electro-optical device based on the data held in the flip-flops of the first data latch, and drives part of the data lines from a second side of the electro-optical device facing the first side based on the data held in the flip-flops of the second data latch.

11. The display driver as defined in claim 5,

wherein the data line driver circuit drives part of the data lines from a first side of the electro-optical device based on the data held in the flip-flops of the first data latch, and drives part of the data lines from a second side of the electro-optical device facing the first side based on the data held in the flip-flops of the second data latch.

12. The display driver as defined in claim 6,

wherein the data line driver circuit drives part of the data lines from a first side of the electro-optical device based on the data held in the flip-flops of the first data latch, and drives part of the data lines from a second side of the electro-optical device facing the first side based on the data held in the flip-flops of the second data latch.

13. The display driver as defined in claim 1, further comprising:

a shift clock signal generation circuit which generates the first and second shift clock signals based on a reference clock signal in the comb-tooth drive mode,

wherein a shift operation period of the first and second shift registers includes a period in which phases of the first and second shift clock signals are reversed.

14. The display driver as defined in claim 2, further comprising:

a shift clock signal generation circuit which generates the first and second shift clock signals based on a reference clock signal in the comb-tooth drive mode,

wherein a shift operation period of the first and second shift registers includes a period in which phases of the first and second shift clock signals are reversed.

15. The display driver as defined in claim 3, further comprising:

a shift clock signal generation circuit which generates the first and second shift clock signals based on a reference clock signal in the comb-tooth drive mode,

wherein a shift operation period of the first and second shift registers includes a period in which phases of the first and second shift clock signals are reversed.

16. The display driver as defined in claim 13, wherein:

the shift clock signal generation circuit generates the second shift clock signal by dividing frequency of the reference clock signal, and generates the first shift clock

signal; and

the first shift clock signal has a pulse in a first stage capture period in which the first bidirectional shift register captures the first opposite directional shift start signal and the first shift clock signal also has a phase which is the reverse of a phase of the second shift clock signal in a data capture period after the first stage capture period.

17. The display driver as defined in claim 14, wherein:

the shift clock signal generation circuit generates the second shift clock signal by dividing frequency of the reference clock signal, and generates the first shift clock signal; and

the first shift clock signal has a pulse in a first stage capture period in which the first bidirectional shift register captures the first opposite directional shift start signal and the first shift clock signal also has a phase which is the reverse of a phase of the second shift clock signal in a data capture period after the first stage capture period.

18. The display driver as defined in claim 15, wherein:

the shift clock signal generation circuit generates the second shift clock signal by dividing frequency of the reference clock signal, and generates the first shift clock signal; and

the first shift clock signal has a pulse in a first stage capture period in which the first bidirectional shift register captures the first opposite directional shift start signal and the first shift clock signal also has a phase which is the reverse of a phase of the second shift clock signal in a data capture period after the first stage capture period.

19. The display driver as defined in claim 1, wherein:

the data lines extend from a first side of the electro-optical device to a second side facing the first side; and

the direction in which the data lines extend is the same as either the first shift direction or the second shift direction.

20. The display driver as defined in claim 1,

wherein, when the scanning lines extend along a long side of the electro-optical device and the data lines extend along a short side of the electro-optical device, the display driver is disposed along the short side.

21. An electro-optical device comprising:

a plurality of scanning lines;

a plurality of data lines alternately arranged inwardly from opposite sides of the electro-optical device in the shape of comb teeth;

a plurality of switching elements respectively connected to the scanning lines and the data lines;

a plurality of pixel electrodes respectively connected to the switching elements;

the display driver which drives the data lines as defined in claim 1; and

a scanning driver which scans the scanning lines.

22. An electro-optical device comprising:

a display panel which includes first and second sides facing each other, a plurality of scanning lines, a plurality of data lines alternately arranged inwardly from the first and second sides in the shape of comb teeth, a plurality of switching elements respectively connected to the scanning lines and the data lines, and a plurality of pixel electrodes respectively connected to the switching elements;

the display driver which drives the data lines as defined in claim 1; and

a scanning driver which scans the scanning lines.